What is claimed is:

1. A method for identifying a compound that induces a morphogen-mediated biological effect, the method comprising the steps of:

(a) providing a test cell comprising DNA defining

a morphogen-responsive transcription activating element, and, in operative association therewith, a reporter gene encoding a detectable gene product,

said DNA, when present in a morphogen-responsive cell contacted with morphogen, serving to induce transcription of said reporter gene;

(b) exposing said test cell to a candidate compound; and,

(c) detecting expression of said detectable gene product, said expression indicating the ability of said candidate compound to induce said morphogen mediated biological effect.

2. The method of claim 1 wherein said morphogen responsive transcription activating element binds with a protein having general DNA-binding properties of a MEF-2 family protein, said DNA binding inducible by performing step (b).

3. The method of claim 1 wherein the nucleotide sequence of said morphogen responsive transcription activating element comprises a sequence that hybridizes to an MEF-2 binding site sequence.

4. The method of claim 1 wherein said morphogen responsive transcription activating element comprises nucleotides 699-731 of Seq. ID No. 1.

5. The method of claim 1 wherein said morphogen responsive transcription activating element comprises nucleotides 682-761 of Seq. ID No. 1.

6. The method of claim 1 wherein said morphogen responsive transcription activating element comprises a sequence of A and T residues.

7. The method of claim 6 wherein the sequence of A and T residues comprises nucleotides 699-711 of Seq. ID No. 1.

8. The method of claim 6 wherein the sequence of A and T residues comprises nucleotides 703-724 of Seq. ID No. 1.

9. The method of claim 6 wherein the A and T residues are adjacent to an AP-1 binding site sequence.

10. The method of claim 9 wherein the AP-1 binding site sequence comprises nucleotides 715-724 of Seq. ID No. 1 or the nucleotide sequence depicted in Seq. ID No. 2.

11. The method of claim 1 or 2 comprising the additional step of:

producing therapeutic-grade commercially-significant quantities of said compound.

12. The method of claim 1 or 2 comprising the additional step of:

administering said compound to humans for therapeutic effect.

13. A method of producing a compound competent to induce a morphogen-mediated biological effect, the method comprising the steps of:

(a) obtaining said compound by screening at least one candidate compound according to the method of claim 1 or 2; and,

(b) producing said compound or a derivative thereof having substantially the same ability as said compound to induce said morphogen mediated biological effect.

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14. The compound identified by the method of claim 1 or 2.

15. A method of assessing whether a sample comprises a substance competent to bind to DNA, the sequence of which comprises nucleotides 699-731 of Seq. ID No. 1, the method comprising the steps of:

(a) providing DNA, the sequence of which comprises nucleotides 699-731 of Seq. ID No. 1;

(b) exposing said DNA to said sample; and,

(c) detecting the binding of said substance to said DNA.

16. A substance identified by the method of claim 15.

17. A substantially pure substance competent to bind to DNA, the sequence of which comprises nucleotides 699-731 of Seq. ID No. 1, such that said substance has the property of modulating expression of a gene encoding a gene product when said DNA is in operative association therewith and said substance is bound thereto.

18. The substantially pure substance of claim 17 comprising a polypeptide, the amino acid sequence of which comprises a sequence sharing homology with the conserved domain of c-fos.

19. The substantially pure substance of claim 17 comprising a polypeptide having general immunological properties of a c-fos family protein.

20. The substantially pure substance of claim 17 comprising a polypeptide comprising an epitope bound by an antibody specific for a polypeptide immunogen having an amino acid sequence comprising the sequence depicted in SEQ. ID No. 4.

21. The substantially pure substance of claim 17 comprising a polypeptide, the binding of which to said DNA is inducible by a morphogen or analog thereof.

22. The substantially pure substance of claim 17 comprising a polypeptide having general DNA-binding properties of a MEF-2 family protein.

23. The substantially pure substance of claim 21 or 22 wherein said substance is competent to bind to DNA consisting of A and T residues.

24. An isolated DNA sequence defining a morphogen-responsive transcription activating element comprising:

(a) nucleotides 699-731, 682-731, or 682-761 of SEQ. ID No. 1;

(b) species and allelic variants of (a);

(c) DNA which hybridizes to the strand complimentary to sequence (a) and is morphogen-responsive under native conditions; and

(d) biosynthetic variants of any of (a), (b) and (c).

25. The isolated DNA sequence of claim 24 wherein said morphogen-responsive transcription activating element comprises an MEF-2 binding site sequence adjacent an AP-1 binding site sequence.

26. An isolated polypeptide chain comprising:

(a) a morphogen-inducible DNA binding protein which can interact with nucleotides 699-711, 715-724, 699-731, 682-731, 703-724 or 682-761 of Seq. ID No. 1;

(b) species or allelic variants of (a);

(c) truncated amino acid sequences of any of (a) and (b) inducible by a morphogen or analog thereof under native conditions;

(d) biosynthetic or recombinant variants of any of the above.

27. An isolated binding protein having binding specificity for a polypeptide chain of claim 26.

28. The isolated binding protein of claim 27 wherein said binding protein is an antibody.

29. A cell transfected with any one of the DNA sequences of claim 24 or 25.

30. A method of detecting a morphogen-mediated biological affect, the method comprising the step of: detecting DNA binding of the protein of claim 26.

31. The method of claim 30 comprising the additional step of providing a morphogen or a morphogen analog to a morphogen responsive cell prior to said detecting step, and wherein said DNA binding is detected within about 2 to 12 hours.

32. The method of claim 30 comprising the additional step of providing a morphogen or morphogen analog to a morphogen responsive cell prior to said detecting step, and wherein said DNA binding is detected within about 2 to 6 hours.

33. The method of claim 1, 2, 15 or 30 comprising part of a medium or high-flux screening assay.

34. The method of claim 1 or 2 comprising the additional step of:

producing therapeutic-grade commercially-significant quantities of said compound.

35. The method of claim 1 or 2 comprising the additional step of:

administering said compound to humans for therapeutic effect.

36. A method for identifying a candidate compound that induces a morphogen-mediated biological effect, the method comprising the steps of:

(a) providing a test cell comprising DNA defining a morphogen responsive transcription activating element, said DNA, when present in a morphogen responsive cell contacted with morphogen, serving to induce transcription of a reporter gene operatively associated with said transcription activating element;

(b) exposing said test cell to a candidate compound; and

(c) detecting morphogen inducible DNA binding to said transcription activating element by a cellular protein, said binding indicating the ability of said candidate compound to induce said morphogen mediated biological effect,

wherein step (c) occurs within approximately 2 - 12 hours of completing step (b).

37. A method for monitoring cell differentiation or tissue morphogenesis comprising the step of: detecting DNA binding of the protein of claim 21, 22, 23 or 26 in a cell exposed to a morphogen or analog thereof.

38. The method of claim 37 wherein said cell is a chondrocyte.

39. The method of claim 37 wherein said tissue is bone.

40. The method of claim 37 wherein said cell differentiation is chondroblast or osteoblast cell differentiation.

41. The method of claim 37 wherein said DNA binding is detected within 2 to 6 hours of exposing said cell to said morphogen or analog thereof.

42. A method for identifying a tissue responsive to a morphogen or analog thereof, comprising the step of: detecting DNA binding of the protein of claim 21,22,23 or 26 in said tissue, or a cell therefrom, exposed to said morphogen or analog thereof.

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